DENON

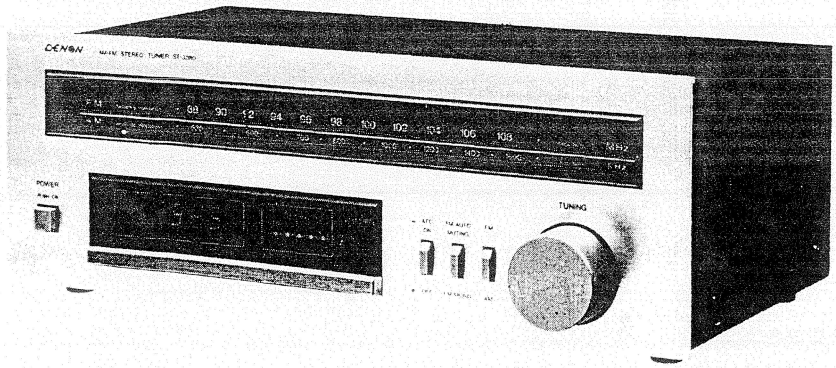
Hi-Fi AM-FM Stereo Tuner

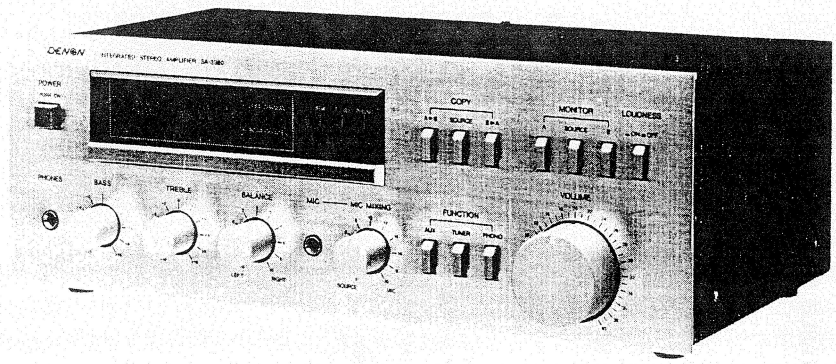
Hi-Fi Pre-Main Amplifier

SERVICE MANUAL

MODEL ST-3380 SOLID STATE AM-FM STEREO TUNER

SA-3380 SOLID STATE STEREO INTEGRATED AMPLIFIER





NIPPON COLUMBIA CO., LTD.

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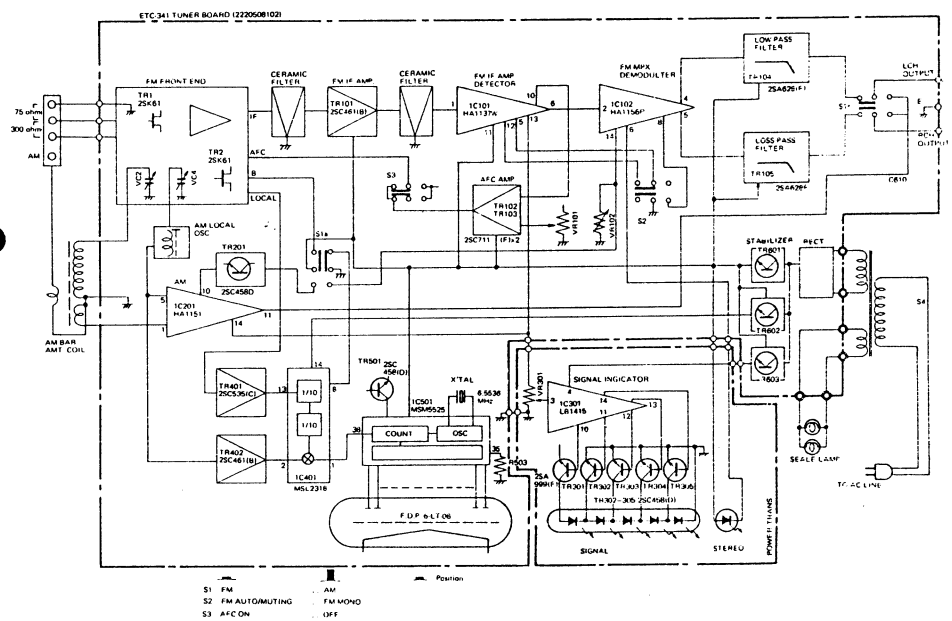
SPECIFICATIONS

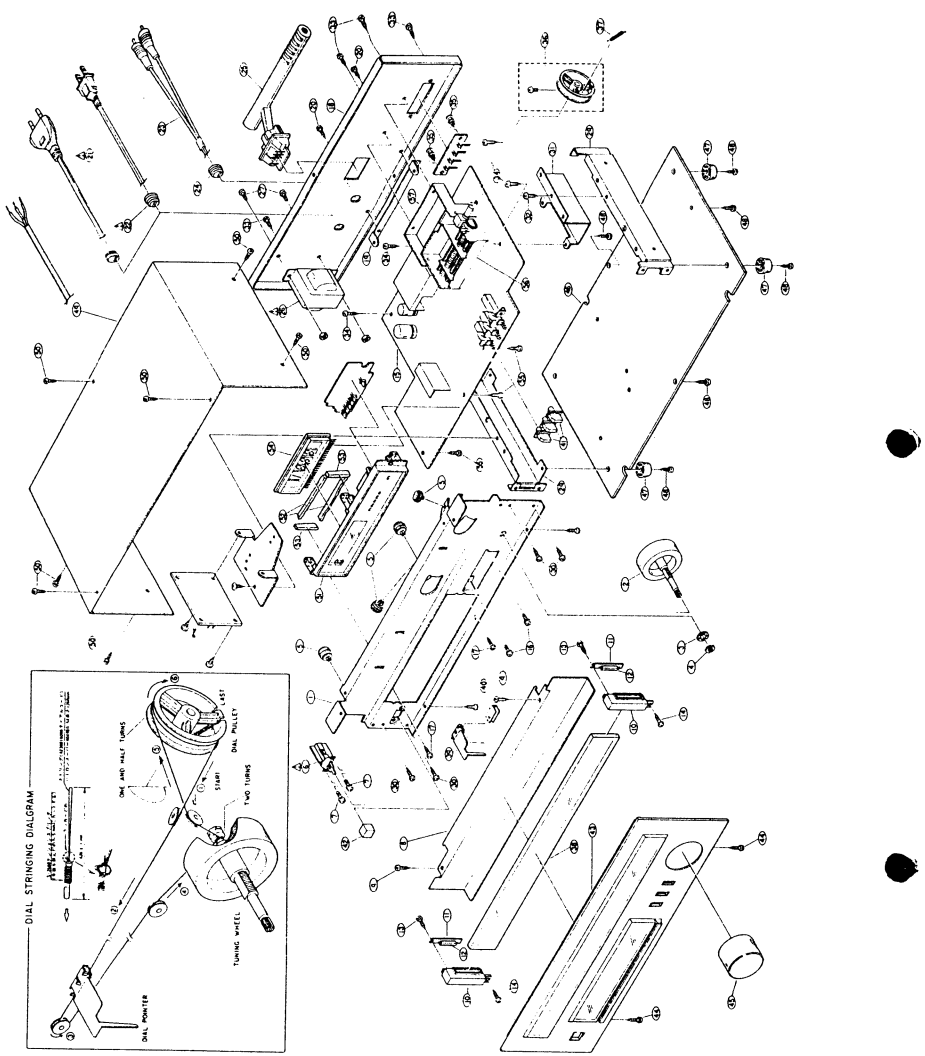
Type:	Solid State AM-FM Stereo Tuner
Semiconductors:	7-Integrated Circuits, 2-FET, 17 Transistors and 18-Diodes (add LED 6) F.D.P. 1
FM SECTION	
Receiving Range:	88 – 108 MHz 87.5 – 108 MHz (Germany only)
I.F.:	10.7 MHz
Usable Sensitivity:	1.8μV (IHF), 10.3 dBf (NEW IHF) (MONO)
50 dB Quaiting Sensitivity:	3μV (IHF), 14.8 dBf (NEW IHF) (MONO)
Capture Ratio:	1.2 dB (IHF)
Twing Signal Selectivity:	65 dB
Image Rejection:	55 dB
I.F. Rejection:	85 dB
AM Suppression:	55 dB
Frequency Response:	20 Hz – 15 kHz +0.2 dB, –1.5 dB
Harmonic Distortion:	Stereo 0.3% (at 1 kHz, 100% mod.) Mono 0.15% (at 1 kHz, 100% mod.)
Stereo Separation:	40 dB (at 1 kHz)
Signal to Noise Ratio:	70 dB
Rated Output Voltage:	170 mV (at 30% mod.)
AM SECTION (MW or LW)	
Receiving Range:	525 – 1,605 kHz (MW) 150 – 350 kHz (LW)
I.F.:	452.5 kHz
Usable Sensitivity:	300 μV/m
Signal to Noise Ratio:	55 dB
Rated Output Voltage:	170 mV (at 30% mod.)
OTHERS	
Power Requirement:	AC 120 volt, 60 Hz or AC 115/200/230 volt 50/60 Hz or AC 220 volts, 50 Hz or AC 240 volts, 50 Hz
Power Consumption:	11 Watt
Dimensions:	400 (W) x 143.5 (H) x 261 (D) mm
Net Weight:	4.3 kg

Design and specifications subject to change without notice.

BLOCK DIAGRAM



EXPLODED VIEW OF CHASSIS AND CABINET



ST-3380 PARTS LIST

NOTE: 2DFL for France; 2DG for Germany; 2DI for Italy; 2DUK for Union King; MDS.H for Singapore & Hong kong

Ref. No.	Part No.	Part Name & Descriptions	Remarks
1	4110202105	FRONT CHASSIS	
2	4210136003	TUNING FLYWHEEL ASS.	
3	4753800003	9 TOOTH WASHER	
4	4756802008	9 NUT	
5	4210164004	GUIDE WHEEL	
6	2124154021	POWER SWITCH	ST-3380 2DUK
6	2124154018	POWER SWITCH	ST-3380 MDS, MDH, 2DG, 2DI, 2DFL
7	4700009006	CROSS PAN SCREW WITH WASHER 3 x 6	
8	4510036007	BACK PLATE	
9	4730354019	TAPPING SCREW (2) 3 x 8	

Ref. No.	Part No.	Part Name & Descriptions	Remarks
10	4530011109	LAMP HOLDER	
11	2220470007	P.C. BOARD	
12	3930016006	PILOT LAMP	
13	4730304014	TAPPING SCREW (1) 3 x 8	
14	4730354019	TAPPING SCREW (2) 3 x 8	
15	ETC-341B	TUNER & LED UNIT	ST-3380 2DFL
15	ETC-341C	TUNER & LED UNIT	ST-3380 2DUK, 2DI, 2DG
15	ETC-341D	TUNER & LED UNIT	ST-3380 MDS, MDH
16	4700009006	CROSS PAN SCREW WITH S. WASHER 3 x 6	
17	4730305013	TAPPING SCREW (1) 3 x 10	
18	1050264222	BACK PANEL	ST-3380 2DUK
18	1050264235	BACK PANEL	ST-3380 2DG
18	1050264219	BACK PANEL	ST-3380 2DI, 2DFL
18	1050264248	BACK PANEL	ST-3380 MDS, MDH
19	4120548008	BRACKET (B)	
20	4770064107	FIXING SCREW	
21	2062020000	AC CORD	ST-3380 2DUK
21	2062002031	AC CORD	ST-3380 2DG, 2DI, 2DFL
21	2006031026	AC CORD	ST-3380 MDS, MDH
22	4450004102	BUSHING	ST-3380 2DUK
22	4450020005	BUSHING	ST-3380 2DG, 2DI, 2DFL
22	MD-3802	BUSHING	ST-3380 MDS, MDH
23	2048055023	2P. PIN CORD	
24	MD-3802	BUSHING	
25	2311050103	BAR ANT COIL ASS.	ST-3380 2DUK, MDS, MDH
25	2311056000	LW BAR ANT COIL	ST-3380 2DFL
26	2335193004	POWER TRANS	ST-3380 2DUK
26	2335187007	POWER TRANS	ST-3380 2DG, 2DI, 2DFL
26	2335201006	POWER TRANS	ST-3380 MDS, MDH
27	4770064107	FIXING SCREW	
28	–	–	–
29	4120537006	SIDE CHASSIS	
30	4730354019	TAPPING SCREW (2) 3 x 8	
31	4120538005	BRACKET (A)	
32	4730354019	TAPPING SCREW (2) 3 x 8	
33	4770064107	FIXING SCREW	
34	4730354019	TAPPING SCREW (2) 3 x 8	
35	4770096007	PUSH RIVET	
36	4210159006	DIAL WHEEL	
37	S––2680	TENSION SPRING	
38	1410169006	DIAL SCALE	ST-3380 2DG, 2DI, 2DUK, MDS, MDH
38	1410168007	DIAL SCALE	ST-3380 2DFL
39	4520042010	POINTER	
40	CF-7594J2	SPACER	
41	1130142109	PUSH KNOB (A)	
42	1130143108	PUSH KNOB (B)	
43	1440479122	FRONT PANEL ASS.	ST-3380 2DUK, 2DG, MDS, MDH, 2DI
43	1440479119	FRONT PANEL ASS.	ST-3380 2DFL
44	4730354019	TAPPING SCREW (2) 3 x 8	
45	1120239006	TUNING KNOB	
46	1050265014	BOTTOM COVER	ST-3380 2DFL, 2DI, 2DUK, MDS, MDH
46	1050265030	BOTTOM COVER	ST-3380 2DG
47	MD-5268	FOOT	
48	4770052012	FIXING SCREW	
49	1020085017	TOP COVER	
50	4770064107	FIXING SCREW	
51	4510035011	DISPLAY COVER ASS.	
52	1290002082	SOFT TAPE	
53	4610094062	RUBBER SHEET	
54	3934003002	F.D.P. 6-LT-06	
55	4730305013	TAPPING SCREW (1) 3 x 10	
56	2160026003	FRONT END	
57	4120549007	BRACKET (C)	
58	ETC-232E01	POWER SOURCE UNIT	ST-3380 2DUK
58	ETC-232Z	POWER SOURCE UNIT	ST-3380 2DG, 2DI, 2DFL
58	ETC-232R	POWER SOURCE UNIT	ST-3380 MDS, MDH
59	4150153104	INSULATING COVER	ST-3380 2DUK
60	4150153104	WIRE CLAMP BAND	
61	4150135025	INSULATING CASE	ST-3380 2DUK

METHOD OF ADJUSTMENTS

Carry out adjustments at room temperature and normal humidity and with the power source operating at the rated voltage.

FM/MPX ALIGNMENT POINTS & CONNECTIONS

STEP	ITEM	DIAL SETTING	INPUT SIDE					OUTPUT SIDE		ADJUST	ADJUST LIMIT	REMARKS
			INSTRUMENT	FREQ.	INPUT LEVEL	MODULATION	COUPLING	INSTRUMENT	CONNECTION			
1	Demodulation balance	–	–	–	No signal	–	–	Tuning meter	Both R115 terminals	T101	Tuning meter to center position	Switch FM AUTO/ MUTING SW to FM MONO. Put AFC off.
2	Demodulation linearity	98 MHz	FM S.S.G.	98 MHz	60 dBμ	1 kHz 100%	ANT. terminal	Distortion meter	Output terminal (L-channel)	T102	Minimum distortion	
3	Demodulation balance	Detuning	FM S.S.G.	98 MHz	60 dBμ	1 kHz 100%	ANT. terminal	Tuning meter	Both R115 terminals	T101	Tuning meter to center position	
4	Demodulation linearity	98 MHz	FM S.S.G.	98 MHz	60 dBμ	1 kHz 100%	ANT. terminal	Distortion meter	Output terminal (L-channel)	T102	Minimum distortion	
5	By repeating Steps 3 and 4 adjust it so that the pointer of the tuning meter will come to the center when detuned.											
6	Front end IFT	98 MHz	FM S.S.G.	98 MHz	60 dBμ	1 kHz 100%	ANT. terminal	Distortion meter	Output terminal (L-channel)	Front end IFT core	Minimum distortion	Same as above
7	If the tuning meter points to the center after detuning, it means that distortion adjustment has been completed. If not, repeat adjustments of Steps 2 through 6.											
8	AFC balance	–	–	–	No signal	–	–	Tuning meter	Both S_1 terminals (Right Fig.)	VR101	Tuning meter to center position	2 ~ 3 k ohm
9	19 kHz	98 MHz	FM S.S.G.	98 MHz	60 dBμ V	No modulation	ANT terminal	Frequency counter	Through 100 k ohms to TP-16	VR201	19 kHz ± 50 Hz	
10	Front end IFT	98 MHz	Stereo modulator FM S.S.G.	98 MHz	60 dBμ V	Main 90%(1 kHz) Pilot 10%	ANT. terminal	Distortion meter	Output terminal (L-channel)	Front end IFT core	Minimum distortion	Same as above
11	Signal indicator	98 MHz	FM S.S.G.	98 MHz	53 dBμ V	–	ANT. terminal	Signal indicator set	Eye observation	VR301	The 5th LED light up	–
12	Only after making sure the FM S.S.G. indicates 92 MHz and the set's digital tuning display is 92 MHz, set the dial pointer at the center of the letters 92 MHz.											

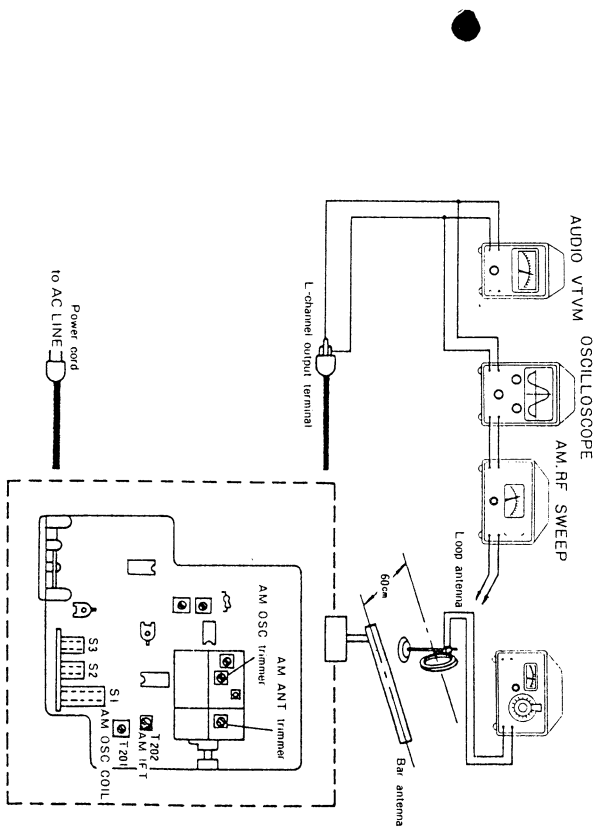
AM ALIGNMENT

												Switch FM-AM or LW
1	AM IFT	–	AM IF Sweep generator	–	Regulate to a level a half of the level where at the waveform distorts.	–	Bar ANT. coil	Oscilloscope	R209=2.7 k ohm (L-channel)	T202	Maximum heights and best symmetry curve	Select SW (AM)
2	T201	600 kHz	AM S.S.G.	600 kHz	Input level is not over to works AGC	400 Hz 30%	Bar ANT. coil	VTVM	Output terminal (L-channel)	T201	Maximum audio output	Select SW (AM)
3	Bar ANT. coil	600 kHz	AM S.S.G.	600 kHz	Input level is not over to works AGC	400 Hz 30%	Bar ANT. coil	VTVM	Output terminal (L-channel)	Bar ANT. coil	Maximum audio output	Select SW (AM)
4	OSC trimmer	1400 kHz	AM S.S.G.	1400 kHz	Input level is not over to works AGC	400 Hz 30%	Bar ANT. coil	VTVM	Output terminal (L-channel)	OSC trimmer	Maximum audio output	Select SW (AM)
5	ANT. trimmer	1400 kHz	AM S.S.G.	1600 kHz	Input level is not over to works AGC	400 Hz 30%	Bar ANT. coil	VTVM	Output terminal (L-channel)	ANT. trimmer	Maximum audio output	Select SW (AM)
6	By repeating Steps 2 through 5, adjust it so that 600 kHz and 1400 kHz signals will be properly received when the sets' pointer is set to the receiving positions of 600 kHz and 1400 kHz, respectively.											

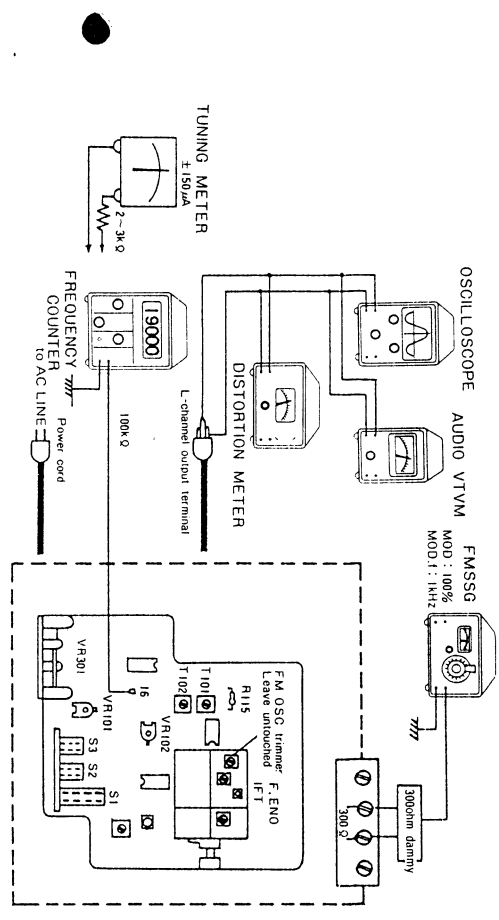
LW ALIGNMENT (For 2DFL)

												Switch FM-AM or LW
1	AM IFT	–	AM IF Sweep generator	–	Regulate to a level a half of the level where at the waveform distorts.	–	Bar ANT. coil	Oscilloscope	R209=2.7 k ohm (L-channel)	T202	Maximum heights and best symmetry curve	Select SW (AM)
2	T201	170 kHz	AM S.S.G.	170 kHz	Input level is not over to works AGC	400 Hz 30%	Bar ANT. coil	VTVM	Output terminal (L-channel)	T201	Maximum audio output	Select SW (AM)
3	Bar ANT. coil	170 kHz	AM S.S.G.	170 kHz	Input level is not over to works AGC	400 Hz 30%	Bar ANT. coil	VTVM	Output terminal (L-channel)	Bar ANT. coil	Maximum audio output	Select SW (AM)
4	OSC trimmer	300 kHz	AM S.S.G.	300 kHz	Input level is not over to works AGC	400 Hz 30%	Bar ANT. coil	VTVM	Output terminal (L-channel)	OSC trimmer	Maximum audio output	Select SW (AM)
5	ANT. trimmer	300 kHz	AM S.S.G.	300 kHz	Input level is not over to works AGC	400 Hz 30%	Bar ANT. coil	VTVM	Output terminal (L-channel)	ANT. trimmer	Maximum audio output	Select SW (AM)
6	By repeating Steps 2 through 5 adjust it so that 170 kHz and 350 kHz signals will be properly received when the sets' pointer is set to the receiving positions of 170 kHz and 300 kHz, respectively.											

AM ALIGNMENT POINTS & CONNECTIONS

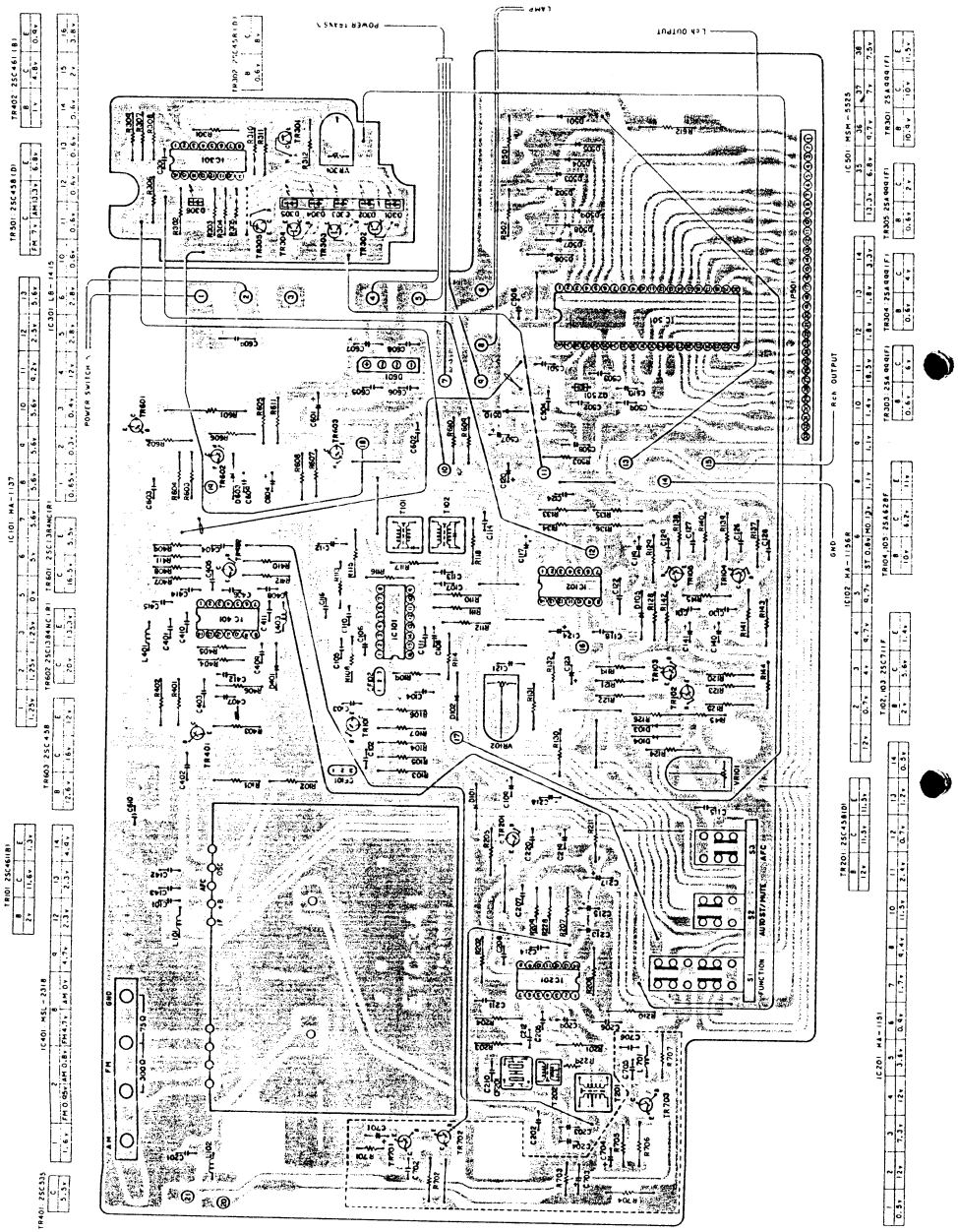


FM/MPX ALIGNMENT



PRINTED CIRCUIT BOARD PATTERNS AND PARTS LIST

TUNER & LED UNIT ETC-341B (2DFL). ETC-341C (2DI, 2DG, 2DUK). ETC-341D (MDS, MDH)



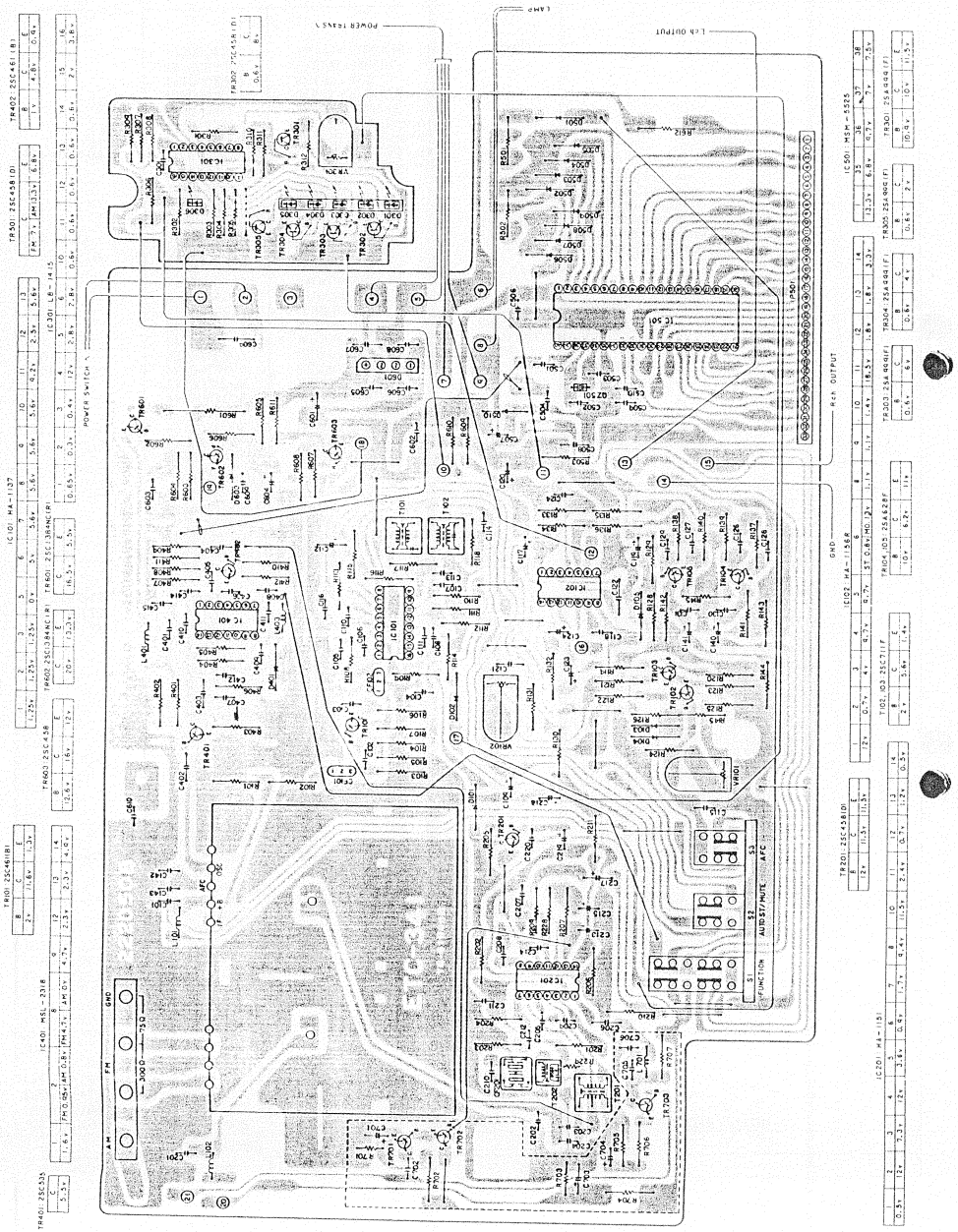
ETC-341 (For 2DG, 2DI, 2DUK) PARTS LIST

*Mark make a difference by model.

Ref. No.	Part No.	Part Name & Descriptions			
	SEMICONDUCTORS				
IC101	2630051003	HA-1137W	INTEGRATED CIRCUIT		
IC102	2630043011	HA-1156R	INTEGRATED CIRCUIT		
IC201	2630040001	HA-1151	INTEGRATED CIRCUIT		
IC301	2630085008	LB1415	INTEGRATED CIRCUIT		
IC401	2620086004	MSL-2318	INTEGRATED CIRCUIT		
IC501	2620087003	MSM-5525	INTEGRATED CIRCUIT		
* TR101,402	2730025010	2SC461(B)	TRANSISTOR		
TR401	2730043021	2SC535(C)	TRANSISTOR		
* TR201,302,303, 304,305,501, 603	2730021043	2SC458 (D)	TRANSISTOR		
TR601,602	2730197003	2SC1384NC-R	TRANSISTOR		
TR102,103	2730064055	2SC711 (F)	TRANSISTOR		
TR301	2710113007	2SA999 (F)	TRANSISTOR		
TR104,105	2710033022	2SA628 (F)	TRANSISTOR		
D510	2760177019	MZ306A	DIODE		
D603	2760174012	MZ314 (B)	DIODE		
D101,103,104, 105,401,501, 503,201,505	2760049008	1S2076	DIODE		
D601	2760234004	S1VB20	DIODE		
P501	3934003002	F.D.P (6-LT-06)			
	4730305013	TAPPING SCREW 3 x 10	FOR DISPLAY COVER ASSY FIXED		
D301	3939046019	LED	FOR SIGNAL ORANGE 5 GANG		
D106	3939046006	LED	FOR BEACON ORANGE SINGLE		
QZ501	3990008009	X-TAL 6.5536 MHz			
	RESISTORS				
R413	2410266005	10 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R609	2410275009	24 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R312	2410277007	30 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R102,110,202 602,606	2410290000	100 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R611	2410288009	82 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R103,107,108	2410302008	330 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R411,412	2410306004	470 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R605	2410308002	560 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R211	2410310003	820 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R139,140	2410311002	750 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R106,403	2413140009	1 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R413	2410298002	220 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R121,122	2410337002	9.1 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R115,104,146, 135,136,137, 138,205,207, 228,311,404, 307,405,408	2410338001	10 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R113,402	2410340002	12 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R131	2410342000	15 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R117	2410343009	16 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R309,410	2410344008	18 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R145	2410348004	27 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R501	2410346006	22 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R114	2410347005	24 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R608	2410349003	30 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R101,607,123	2410316007	1.2 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R105,301,503	2410320006	1.8 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R118,407,603	2410321005	2 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R112,130,132, 604	2410322004	2.2 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R610	2410309001	620 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R206,209,133, 134	2410324002	2.7 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R128	2410326000	3.3 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R141,142,306	2410328008	3.9 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R201	2410330009	4.7 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R203	2410332007	5.6 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R129,401	2410336003	8.2 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R127	2410354001	47 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R409	2410353002	43 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R111,406	2410354001	47 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R204	2410358007	68 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R125	2410360008	82 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R120,143,144, 302,303	2410362006	100 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R304,305,308	2410362006	100 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R310	2410356009	56 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R124	2410364004	120 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R119	2410366002	150 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R169,210	2410378003	470 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R229	2412022085	47 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR STANDING TYPE
R612	2410155006	56 ohm	±5%	1/2W	FIXED CARBON FILM RESISTOR
R601	2440084008	68 ohm	±5%	2W	FIXED METAL OXIDE FILM RESISTOR

PRINTED CIRCUIT BOARD PATTERNS AND PARTS LIST

TUNER & LED UNIT ETC-341B (2DFL). ETC-341C (2DI, 2DG, 2DUK). ETC-341D (MDS, MDH)



ETC-341 (For 2DG, 2DI, 2DUK) PARTS LIST

*Mark make a difference by model.

Ref. No.	Part No.	Part Name & Descriptions			
		SEMICONDUCTORS			
IC101	2630051003	HA-1137W			INTEGRATED CIRCUIT
IC102	2630043011	HA-1156R			INTEGRATED CIRCUIT
IC201	2630040001	HA-1151			INTEGRATED CIRCUIT
IC301	2630085008	LB1415			INTEGRATED CIRCUIT
IC401	2620086004	MSL-2318			INTEGRATED CIRCUIT
IC501	2620087003	MSM-5525			INTEGRATED CIRCUIT
* TR101,402	2730025010	2SC461(B)			TRANSISTOR
TR401	2730043021	2SC535(C)			TRANSISTOR
* TR201,302,303, 304,305,501, 603	2730021043	2SC458 (D)			TRANSISTOR
TR601,602	2730197003	2SC1384NC-R			TRANSISTOR
TR102,103	2730064055	2SC711 (F)			TRANSISTOR
TR301	2710113007	2SA999 (F)			TRANSISTOR
TR104,105	2710033022	2SA628 (F)			TRANSISTOR
D510	2760177019	MZ306A			DIODE
D603	2760174012	MZ314 (B)			DIODE
D101,103,104, 105,401,501, 503,201,505	2760049008	1S2076			DIODE
D601	2760234004	S1VB20			DIODE
P501	3934003002	F.D.P (6-LT-06)			
	4730305013	TAPPING SCREW 3 x 10 FOR DISPLAY COVER ASSY FIXED			
D301	3939046019	LED FOR SIGNAL ORANGE 5 GANG			
D106	3939046006	LED FOR BEACON ORANGE SINGLE			
QZ501	3990008009	X-TAL 6.5536 MHz			
		RESISTORS			
R413	2410266005	10 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R609	2410275009	24 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R312	2410277007	30 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R102,110,202 602,606	2410290000	100 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R611	2410288009	82 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R103,107,108	2410302008	330 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R411,412	2410306004	470 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R605	2410308002	560 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R211	2410310003	820 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R139,140	2410311002	750 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R106,403	2413140009	1 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R413	2410298002	220 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R121,122	2410337002	9.1 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R115,104,146, 135,136,137, 138,205,207, 228,311,404, 307,405,408	2410338001	10 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R113,402	2410340002	12 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R131	2410342000	15 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R117	2410343009	16 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R309,410	2410344008	18 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R145	2410348004	27 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R501	2410346006	22 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R114	2410347005	24 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R608	2410349003	30 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R101,607,123	2410316007	1.2 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R105,301,503	2410320006	1.8 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R118,407,603	2410321005	2 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R112,130,132, 604	2410322004	2.2 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R610	2410309001	620 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R206,209,133, 134	2410324002	2.7 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R128	2410326000	3.3 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R141,142,306	2410328008	3.9 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R201	2410330009	4.7 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R203	2410332007	5.6 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R129,401	2410336003	8.2 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R127	2410354001	47 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R409	2410353002	43 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R111,406	2410354001	47 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R204	2410358007	68 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R125	2410360008	82 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R120,143,144, 302,303	2410362006	100 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R304,305,308	2410362006	100 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R310	2410356009	56 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R124	2410364004	120 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R119	2410366002	150 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R169,210	2410378003	470 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R229	2412022085	47 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR STANDING TYPE
R612	2410155006	56 ohm	±5%	1/2W	FIXED CARBON FILM RESISTOR
R601	2440084008	68 ohm	±5%	2W	FIXED METAL OXIDE FILM RESISTOR

(Con.)

Ref. No.	Part No.	Part Name & Descriptions
		CAPACITORS
C101,102,103, 104,105,106, 108,111,113, 114,143,144, • 162,205,206, 209,211,212, 214,220,401, 403,404,405, 407,408,409, 410,412,510, 501,504,609, 608,506,606	2531024003	0.01μ F +80%,–20% 50V FIXED CERAMIC CAPACITOR
• C107,508	2531025002	0.022μF +80%,–20% 50V FIXED CERAMIC CAPACITOR
C128,129	2531001000	330pF ±10% 50V FIXED CERAMIC CAPACITOR
C207,406	2531004007	0.001μF ±10% 50V FIXED CERAMIC CAPACITOR
C131,130	2551064001	0.0022μF ±10% 50V FIXED PLASTIC FILM CAPACITOR
C126,127	2531007004	0.0033μF ±10% 50V FIXED CERAMIC CAPACITOR
• C201	2533596005	3pF ±0.25pF 50V FIXED CERAMIC CAPACITOR
• C202,502,503	2533610004	20pF ±5% 50V FIXED CERAMIC CAPACITOR
C411	2533619005	47pF ±5% 50V FIXED CERAMIC CAPACITOR
C301	2533661008	220pF ±10% 50V FIXED CERAMIC CAPACITOR
C210	2533621006	56pF ±5% 50V FIXED CERAMIC CAPACITOR
C116,414	2533627000	100pF ±5% 50V FIXED CERAMIC CAPACITOR
• C208	2533631009	150pF ±5% 50V FIXED CERAMIC CAPACITOR
C507,603	2544010004	100μF ±5% 10V FIXED ELECTROLYTIC CAPACITOR
C119,213,415	2544015009	10μF 16V FIXED ELECTROLYTIC CAPACITOR
C219	2544017007	47μF 16V FIXED ELECTROLYTIC CAPACITOR
C602	2544019005	220μF 16V FIXED ELECTROLYTIC CAPACITOR
C120	2544021006	470μF 16V FIXED ELECTROLYTIC CAPACITOR
C117	2544023004	3.3μF 25V FIXED ELECTROLYTIC CAPACITOR
C118	2544024003	4.7μF 25V FIXED ELECTROLYTIC CAPACITOR
C604	2544030000	330μF 25V FIXED ELECTROLYTIC CAPACITOR
C601	2544031009	470μF 25V FIXED ELECTROLYTIC CAPACITOR
C217	2549014005	50V FIXED ELECTROLYTIC CAPACITOR
• C124,140,141, 112,118,123	2544043000	0.47μF 50V FIXED ELECTROLYTIC CAPACITOR
C109,115,215 142	2544044009	1μF 50V FIXED ELECTROLYTIC CAPACITOR
C216	2551121025	0.01μF ±5% 50V FIXED PLASTIC FILM CAPACITOR
C124,125	2551121054	0.018μF ±5% 50V FIXED PLASTIC FILM CAPACITOR
C122	2551080001	0.047μF ±10% 50V FIXED PLASTIC FILM CAPACITOR
• C203	2556090009	430pF ±5% 50V FIXED PLASTIC FILM CAPACITOR
C121	2556091008	470pF ±5% 50V FIXED PLASTIC FILM CAPACITOR
		OTHER PARTS
	2220508102	PC. BOARD
	EP-5667H3	TERMINAL FOR WRAPPING PIN USED 18
T101	2312024002	IF DET TRANS (A)
T102	2312025001	IF DET TRANS (B)
• T201	2311051005	MW OSC COIL
T202	2310036005	AM IFT
CF101,102	2610025004	CERAMIC FILTER (RED) MARK
CF201	2610019007	CERAMIC FILTER (SFZ452.5A3L)
VR102	EP-74015	V10PB103 VARIABLE RESISTOR
VR101	EP-74018	V10PB503 VARIABLE RESISTOR
VR301	2116000015	V08PB103 VARIABLE RESISTOR
	2160026003	FRONT END
	4120549007	BRACKET (C)
	4770126003	RIVET
	2050060001	4P. TERMINAL FOR ANT TERMINAL
S1a,b,S2,S3	2124155004	PUSH SWITCH FOR FUNCTION, AFC, MUTE-ST.
	2090008120	JUMPER SHORTLEAD USED 3 P=10mm
	2090008117	JUMPER SHORTLEAD USED 9 P=12.5mm
	2090008104	JUMPER SHORTLEAD USED 4 P=15mm
	2090008133	JUMPER SHORTLEAD USED 1 P=7.5mm
L201	2312021005	INDUCTOR (820μH)
• L401,402,403	TRT-0565H1	INDUCTOR (2.2μH)
	4140181005	SHIELD COVER (A)
	4140182004	SHIELD COVER (B)
	4140184002	SHIELD PLATE
	4510035011	DISPLAY COVER ASS'Y
	1290002082	SOFT TAPE
	4610094062	RUBBER SHEET
	4730305013	TAPPING SCREW (1) 3 x 10 USED 3

ETC-341B (For 2DFL)

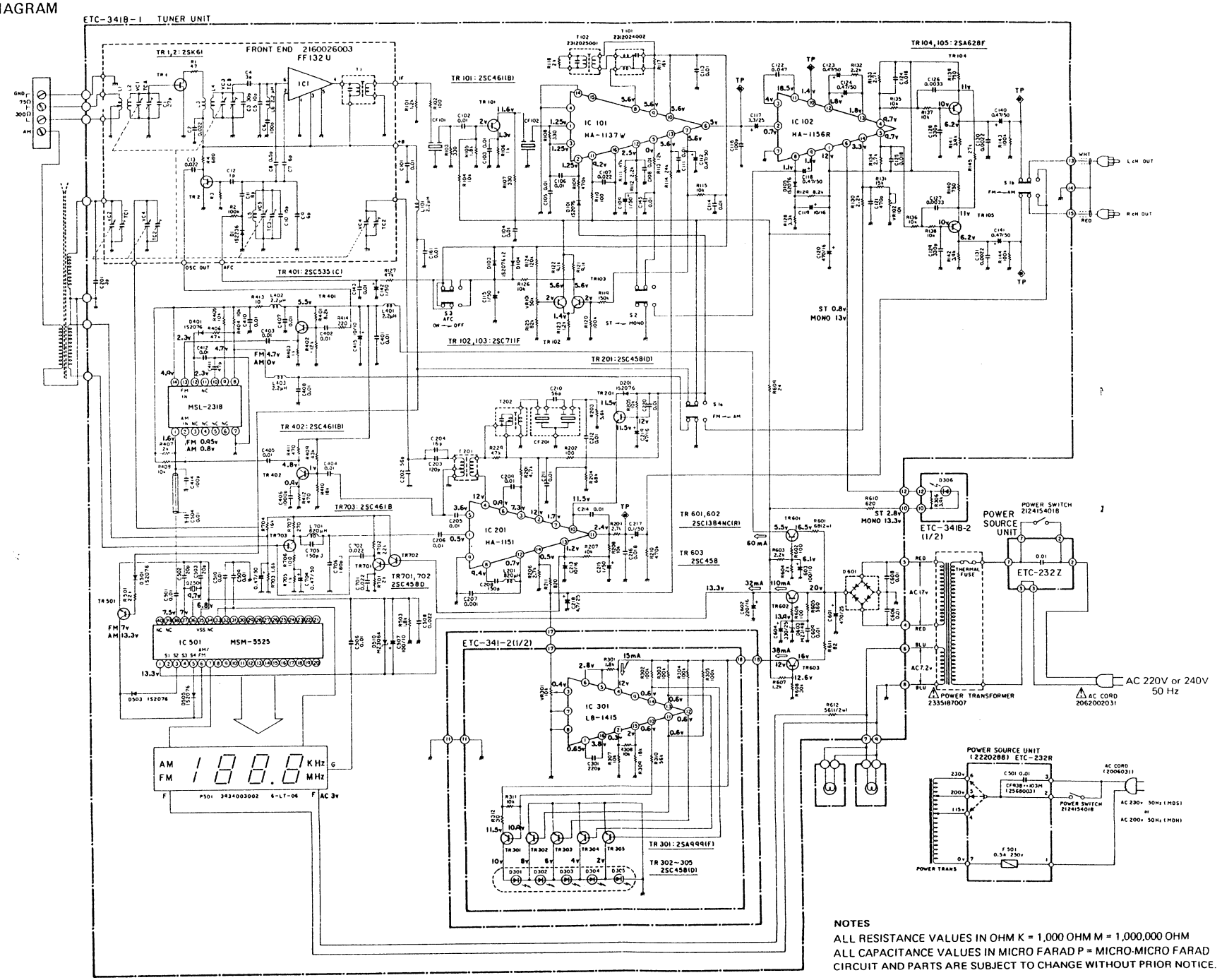
Remarks: All parts excepts bellow listed are the same as the above.

Ref. No.	Part No.	Part Name & Descriptions
		SEMICONDUCTORS
TR101,402,703	2730025010	2SC461 (B) TRANSISTOR
TR201,302,303, 304,305,501, 603,701,702	2730021043	2SC458 (D) TRANSISTOR
D401,501,503, 505	2760049008	1S2076 DIODE
		RESISTORS
R102,110,202, 602,606,706	2410290000	100 ohm ±5% 1/4W FIXED CARBON FILM RESISTOR
R106,403,705	2410314009	1 k ohm ±5% 1/4W FIXED CARBON FILM RESISTOR
R117,704	2410343009	16 k ohm ±5% 1/4W FIXED CARBON FILM RESISTOR
R118,407,603, 701	2410321005	2 k ohm ±5% 1/4W FIXED CARBON FILM RESISTOR
R229	2412022085	47 k ohm ±5% 1/4W FIXED CARBON FILM RESISTOR (DELETE)
R501,702	2410346006	22 k ohm ±5% 1/4W FIXED CARBON FILM RESISTOR
R707	2410300000	270 ohm ±5% 1/4W FIXED CARBON FILM RESISTOR
R703	2410319004	1.6 k ohm ±5% 1/4W FIXED CARBON FILM RESISTOR
		CAPACITORS
C101,102,103, 104,105,106, 108,111,113, 206,209,211, 212,214,220, 114,143,144, 205,405,407, 409,410,412, 408,401,403, 404,501,504, 506,510,606, 608,609,162	2531024003	0.01μF +80,–20% 50V FIXED CERAMIC CAPACITOR
C202	2533621006	56pF ±5% 50V FIXED CERAMIC CAPACITOR
C203	2533312001	120pF ±5% 50V FIXED CERAMIC CAPACITOR
C204	2533608003	16pF ±5% 50V FIXED CERAMIC CAPACITOR
C107,508,701, 702	2531025002	0.022μF +80,–20% 50V FIXED CERAMIC CAPACITOR
C201	2533614000	30pF ±5% 50V FIXED CERAMIC CAPACITOR
C208,705	2533631009	150pF ±5% 50V FIXED CERAMIC CAPACITOR
C706	2533633007	180pF ±5% 50V FIXED CERAMIC CAPACITOR
C112,118,123, 124,140,141, 703,704	2544043000	0.47μF 50V FIXED ELECTROLYTIC CAPACITOR
C502,503	2533610004	20pF ±5% 50V FIXED CERAMIC CAPACITOR
		OTHER PARTS
T201	2311055001	LW OSC COIL
L701	TRT0565H18	INDUCTOR

ETC-341D (For MDS,MDH)

Ref. No.	Part No.	Part Name & Descriptions
		RESISTORS
R121,122	2410337002	9.1 k ohm ±5% 1/4W FIXED CARBON FILM RESISTOR
		CAPACITORS
C101,102,103, 104,105,106, 108,111,113, 114,143,206, 209,211,212, 214,220,401, 403,404,405, 407,409,410, 412,501,504, 506,510,606, 608,609,509, 205	2531024003	0.01μF +80,–20% 50V FIXED CERAMIC CAPACITOR
		OTHER PARTS
L401,402	TRT0565H1	INDUCTOR (2.2μH)

WIRING DIAGRAM



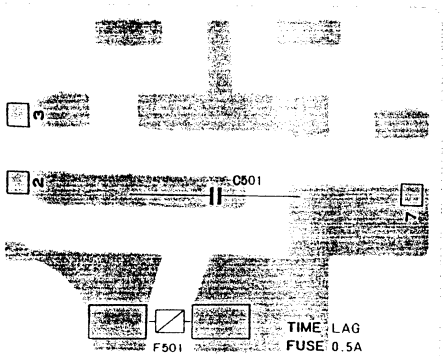
NOTES

ALL RESISTANCE VALUES IN OHM K = 1,000 OHM M = 1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD P = MICRO-MICRO FARAD
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

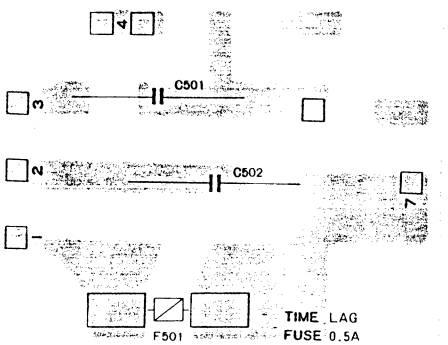
POWER SOURCE UNIT

ETC-232Z (2DG, 2DFL, 2DI), ETC-232E01 (2DUK), ETC-232R (MDS, MDH)

ETC-232Z



ETC-232E01



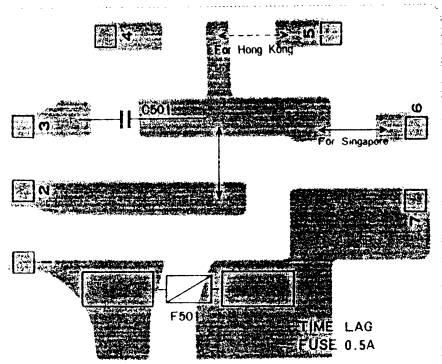
ETC-232Z PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions
	CAPACITORS	
C501	2518001007	0.01μF ±20% 450V FIXED METALIZED CAPACITOR
	OTHER PARTS	
	2220288105	P.C. BOARD
	EP-5667H3	TERMINAL FOR WRAPPING PIN USED 3
	4120626001	P.S. BRACKET
	4730354019	TAPPING SCREW 3 x 8

ETC-232E01

Ref. No.	Part No.	Part Name & Descriptions
	CAPACITORS	
C501,502	2518001007	0.01μF ±20% 450V FIXED METALIZED CAPACITOR
	OTHER PARTS	
F501	2220288105	P.C. BOARD
	EP-5667H3	TERMINAL FOR WRAPPING PIN USED 7
	2020014003	FUSE CLIP
	2061015003	FUSE 0.5A 250V
	4120626001	P.S. BRACKET
	4730354019	TAPPING SCREW 3 x 8

ETC-232R



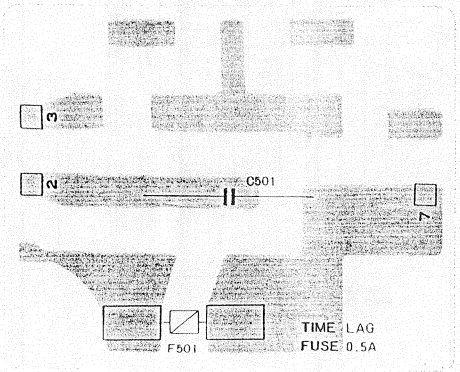
ETC-232R

Ref. No.	Part No.	Part Name & Descriptions
	CAPACITORS	
	2568003000	0.01μF ±20% 300V FIXED METALIZED CAPACITOR
	OTHER PARTS	
	2220288105	P.C. BOARD
	EP-5667H3	TERMINAL FOR WRAPPING PIN USED 7
	EP-5870	FUSE HOLDER
	2061014020	FUSE 0.5A 250V
	2090008117	JUMPER SHORTLEAD USED 2
	4120626001	P.S. BRACKET
	4730354019	TAPPING SCREW 3 x 8

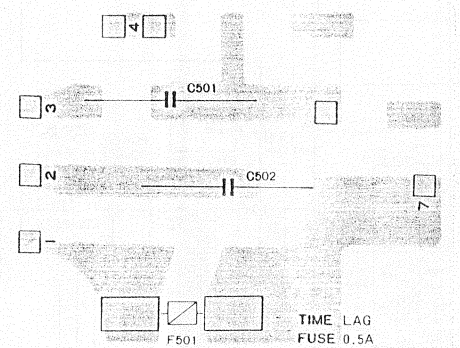
POWER SOURCE UNIT

ETC-232Z (2DG, 2DFL, 2DI), ETC-232E01 (2DUK), ETC-232R (MDS, MDH)

ETC-232Z



ETC-232E01



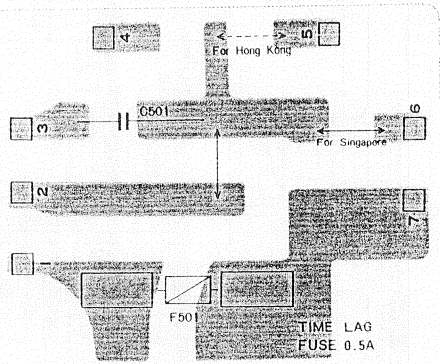
ETC-232Z PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions
	CAPACITORS	
C501	2518001007	0.01μF ±20% 450V FIXED METALIZED CAPACITOR
	OTHER PARTS	
	2220288105	P.C. BOARD
	EP-5667H3	TERMINAL FOR WRAPPING PIN USED 3
	4120626001	P.S. BRACKET
	4730354019	TAPPING SCREW 3 x 8

ETC-232E01

Ref. No.	Part No.	Part Name & Descriptions
	CAPACITORS	
C501,502	2518001007	0.01μF ±20% 450V FIXED METALIZED CAPACITOR
	OTHER PARTS	
F501	2220288105	P.C. BOARD
	EP-5667H3	TERMINAL FOR WRAPPING PIN USED 7
	2020014003	FUSE CLIP
	2061015003	FUSE 0.5A 250V
	4120626001	P.S. BRACKET
	4730354019	TAPPING SCREW 3 x 8

ETC-232R



ETC-232R

Ref. No.	Part No.	Part Name & Descriptions
	CAPACITORS	
	2568003000	0.01μF ±20% 300V FIXED METALIZED CAPACITOR
	OTHER PARTS	
	2220288105	P.C. BOARD
	EP-5667H3	TERMINAL FOR WRAPPING PIN USED 7
	EP-5870	FUSE HOLDER
	2061014020	FUSE 0.5A 250V
	2090008117	JUMPER SHORTLEAD USED 2
	4120626001	P.S. BRACKET
	4730354019	TAPPING SCREW 3 x 8

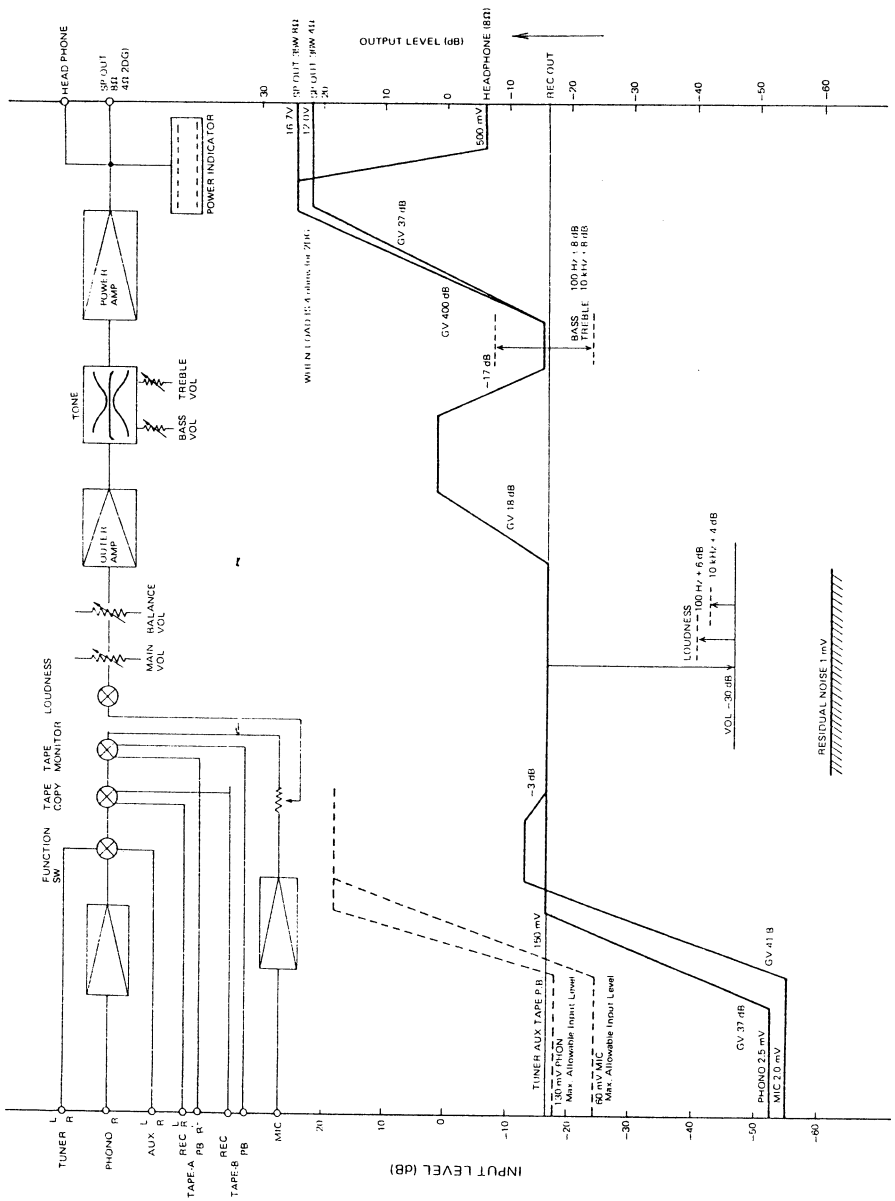
SPECIFICATIONS

Type:	All silicon transistorized stereo premain amplifier
Rated Output Power	
(Both channel driven):	35 watt + 35 watt into 8 ohm load at 1 kHz
	36 watt + 36 watt into 4 ohm load at 1 kHz (2DG)
	30 watt + 30 watt at 20 Hz to 20 kHz
Dynamic Power:	55 watt + 55 watt at 8 ohm (IHF)
	60 watt + 60 watt at 4 ohm (IHF) (2DG)
Harmonic Distortion:	Lower than 0.05% (–3 dB at rated output)
	Lower than 0.5% (at rated output)
Intermodulation Distortion:	Lower than 0.05% (–3 dB at rated output)
Power Bandwidth:	10 Hz – 40 kHz (–3 dB at rated output)
Residual Noise:	Lower than 1 mV (0.1μW)
Damping Factor:	More than 50 (2DG more than 35 at 4 ohm)
Frequency Response:	
PHONO RIAA DEVIATION	20 Hz – 20 kHz ± 1 dB (REC OUT)
TUNNER, AUX	20 Hz – 40 kHz ± 1 dB (TONE FLAT)
TAPE REC/PB	20 Hz – 40 kHz ± 1 dB (TONE FLAT)

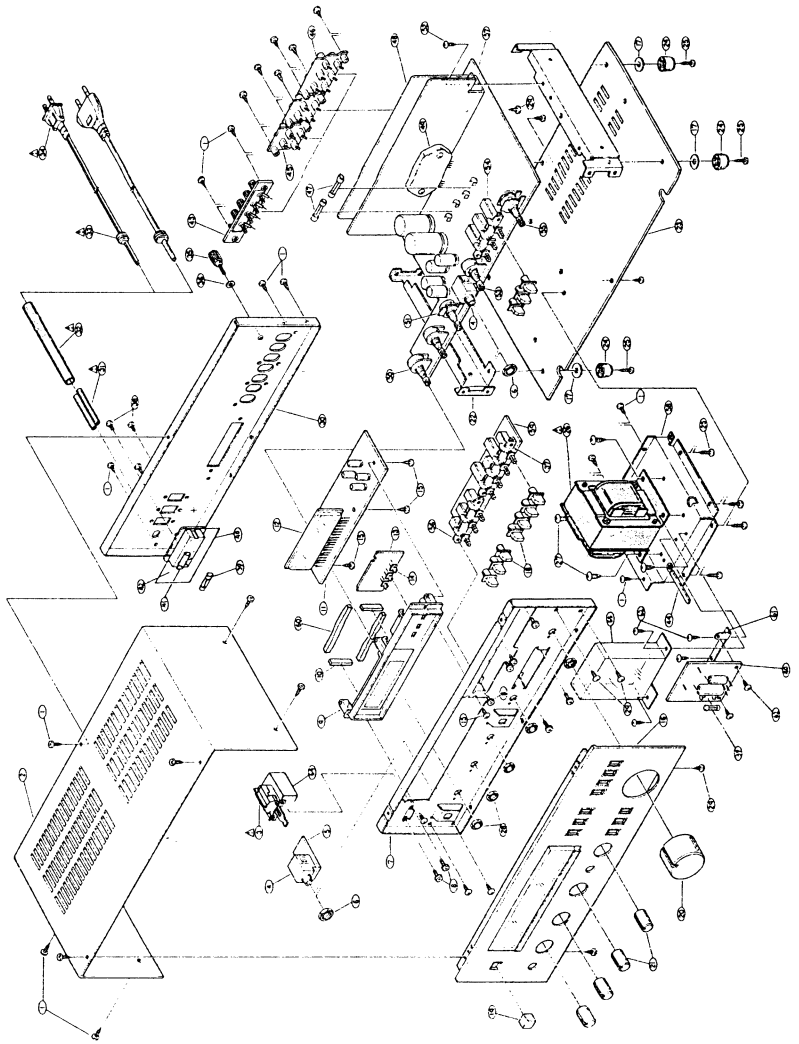
Sensitivity/Signal to Noise Ratio	
PHONO	2.5 mV/70 dB (1 kHz)
	Maximum Allowable Input Level
	130 mV (1 kHz RMS)
TUNER	150 mV/85 dB
AUX	150 mV/85 dB
TAPE PB	150 mV/85 dB
MIC	2 mV/70 dB
Output Level	
TAPE REC	150 mV
HEADPHONES	500 mV/8 ohm
Tone Control:	BASS; ± 8 dB at 100 Hz
	TREBLE; ± 8 dB at 10 kHz
Loudness Control:	+ 8 dB at 100 Hz
	+ 4 dB at 10 kHz
AC Outlets:	No AC outlets are provided in the equipment shipped to Europe.
	Switched outlet 100 W max.
	Unswitched outlet 250 W max.
Power Requirement:	AC 120 volts 60 Hz
	or AC 115/200/230 volts, 50/60 Hz
	or AC 220 volts, 50 Hz
	or AC 240 volts, 50 Hz
Power Consumption:	160 watts (210 watts 2DG) at maximum output 60 watts at T.H.D 5% output x 1/10
	120 VA at T.H.D 5% output x 1/3
Dimensions:	400(W) x 143.5(H) x 255(D) mm
Net Weight:	6.4 kg (2DG 6.6 kg)

Design and specifications subject to change without notice.

BLOCK & LEVEL DIAGRAM



EXPLODED VIEW OF CHASSIS AND CABINET



SA-3380 PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions	Remarks
1	4770064107	FIXING SCREW	
2	1020085004	TOP COVER	
3	2124154021	POWER SWITCH	SA-3380 2DUK
3	2124154018	POWER SWITCH	SA-3380 MDS, MDH, 2DG, 2DF, 2DI
3			
4	2048048006	HEADPHONE JACK	
5	ETC-337B-3	POWER AMP. UNIT	SA-3380 2DF, 2DI, 2DUK
5	ETC-337C-3	POWER AMP. UNIT	SA-3380 2DG
5	ETC-337D-3	POWER AMP. UNIT	SA-3380 MDS, MDH
6	–	SPECIAL NUT 12 mm	
7	4110201009	FRONT CHASSIS	
8	4700009006	CROSS PAN SCREW WITH S. WASHER 3 x 6	

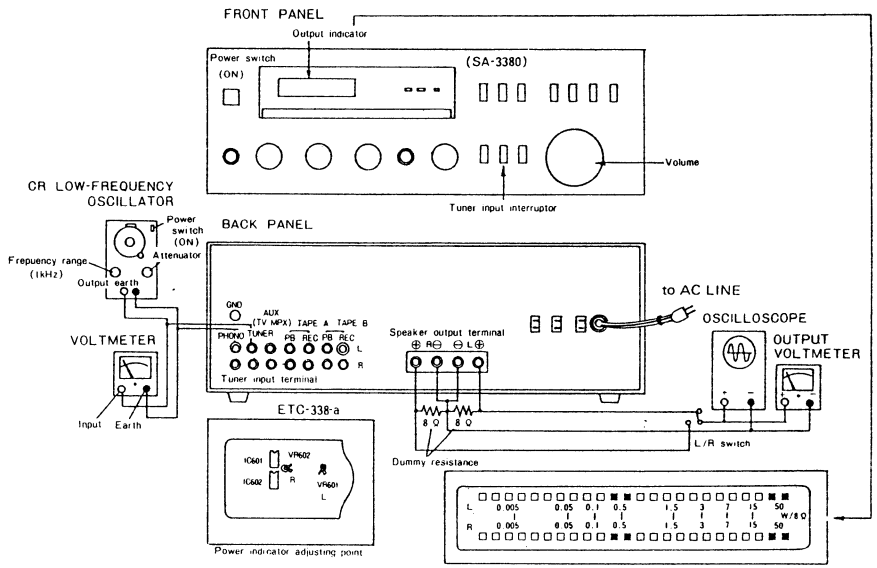
Ref. No.	Part No.	Part Name & Descriptions	Remarks
9	4510035053	DISPLAY COVER ASS.	
9			
9			
10	4610094062	RUBBER SHEET	
11	ETC-338B	POWER INDICATOR UNIT	
12	3934001004	FDP BG-32	
13	ETC-338B	POWER INDICATOR UNIT	
13	ETC-338B	POWER INDICATOR UNIT	
13	ETC-338B	POWER INDICATOR UNIT	
14	3939046006	LED (LIGHT EMITTING DIODE)	
15	47303050133	TAPPING SCREW (1) 3 x 10	
16	1440478110	FRONT PANEL ASS.	
16			
16			
16			
17	4751005004	4 WASHER	
18	1130142109	PUSH KNOB (A)	
19	1130143108	PUSH KNOB (B)	
20	1120237008	KNOB (A)	
21	1120238007	KNOB (B)	
22	4120537006	SIDE CHASSIS	
23	1050265001	BOTTOM COVER	SA-3380 2DUK, 2DF, 2DI, MDS, MDH
23	1050265027	BOTTOM COVER	SA-3380 2DG
24	MD-5268	FOOT	
25	4770052012	FIXING SCREW	
26	2335190007	POWER TRANS	SA-3380 2DUK
26	2335184000	POWER TRANS	SA-3380 2DF, 2DI
26	2335185009	POWER TRANS	SA-3380 2DG
26	2335202005	POWER TRANS	SA-3380 MDS, MDH
27	4734454038	TAPPING SCREW 4 x 8	
28	—	SPECIAL NUT 7 mm	
29	4730354019	TAPPING SCREW (2) 3 x 8	
30	1050263236	BACK PANEL	SA-3380 2DUK
30	1050263210	BACK PANEL	SA-3380 2DI, 2DF
30	1050263223	BACK PANEL	SA-3380 2DG
30	1050263249	BACK PANEL	SA-3380 MDS, MDH
31	EE-221129	UL TUBE 37 mm ϕ3.26	SA-3380 MDS, MDH
32	EE-221134	UL TUBE 45 mm ϕ7.35	SA-3380 MDS, MDH
33	4450004102	BUSHING	SA-3380 2DUK
33	4450020005	BUSHING	SA-3380 2DI, 2DF, 2DG
33	MD-3802	BUSHING	SA-3380 MDS, MDH
34	2062020000	AC CORD	SA-3380 2DUK
34	2062002031	AC CORD	SA-3380 2DI, 2DG, 2DF
34	2006031026	AC CORD	SA-3380 MDS, MDH
35	2030206005	EARTH WIRE ASS.	SA-3380 2DUK
36	4770018001	WASHER	
37	2124152104	3P. PUSH SWITCH (FOR TAPE COPY)	
38	4711304033	CROSS PAN SCREW 3 x 8	SA-3380 MDS, MDH
39	2061014004	FUSE 1A	SA-3380 MDS, MDH
40	ETC-232V	POWER SOURCE UNIT	SA-3380 2DG, 2DI, 2DF
40	ETC-232D01	POWER SOURCE UNIT	SA-3380 2DUK
40	—	POWER SOURCE UNIT	SA-3380 MDS, MDH
41	2568003039	CAPACITOR 0.033μF 300V	SA-3380 MDS, MDH
42	2033904003	AC SOCKET	SA-3380 MDS, MDH
43	2050061107	4P. TERMINAL	
44	EP-4772	CORD HOLDER	
45	2048021007	4P. CONNECTOR BASE	
46	2040061007	6P. CONNECTOR BASE	
47	2061025080	FUSE TIME LAG 3.15A	
48	4170104117	RADIATOR	SA-3380 2DUK, 2DI, 2DF
48	4170104120	RADIATOR	SA-3380 2DG
48	4170104104	RADIATOR	SA-3380 MDS, MDH
49	2650026005	STK-465 I.C.	
50	2110213002	V1620V25KA104-(100 k ohm) TONE VOLUME	
51	2110198004	V16V25KS254T (250 k ohm) BALANCE VOLUME	
52	4730359014	TAPPING SCREW 3 x 16	
53	2110201001	V1620V25KB104B (100 k ohm) MIC VOLUME	
54	2124150009	3P. PUSH SWITCH (INPUT SW)	
55	2110212003	V1620V30K=254- (250 k ohm) MAIN VOLUME	
56	2124151105	4P. PUSH SWITCH (TAPE MONITOR & LOUDNESS)	
57	ETC-337B-1	POWER AMP. UNIT	SA-3380 2DF, 2DI, 2DUK
57	ETC-337C-1	POWER AMP. UNIT	SA-3380 2DG
57	ETC-337D-1	POWER AMP. UNIT	SA-3380 MHS, MDH
58	4120540200	TRANS BRACKET	
59	ETC-337B-2	POWER AMP. UNIT	SA-3380 2DF, 2DI, 2DUK
59	ETC-337C-2	POWER AMP. UNIT	SA-3380 2DG
59	ETC-337D-3	POWER AMP. UNIT	SA-3380 MDS, MDH
60	1290002082	SOFT TAPE	
61	4120622005	P.S. BRACKET	SA-3380 2DUK, 2DG, 2DF, 2DI
62	4730354019	TAPPING SCREW 3 x 8	SA-3380 2DUK, 2DG, 2DF, 2DI
63	4450033005	WIRE CLAMP BAND	
64	4150153104	INSULATING COVER	SA-3380 2DUK
65	4150162005	INSULATING CASE	SA-3380 2DG, 2DUK, 2DI, 2DF
	4170116008	POWER RADIATOR	3A-3380 2DG

METHOD OF ADJUSTMENTS

Carry out adjustments at room temperature and normal humidity and with the power source operating at the rated voltage.

POWER INDICATOR OUTPUT ADJUSTMENTS (Unit ETC-338-a)

- ALIGNMENT POINTS & CONNECTIONS

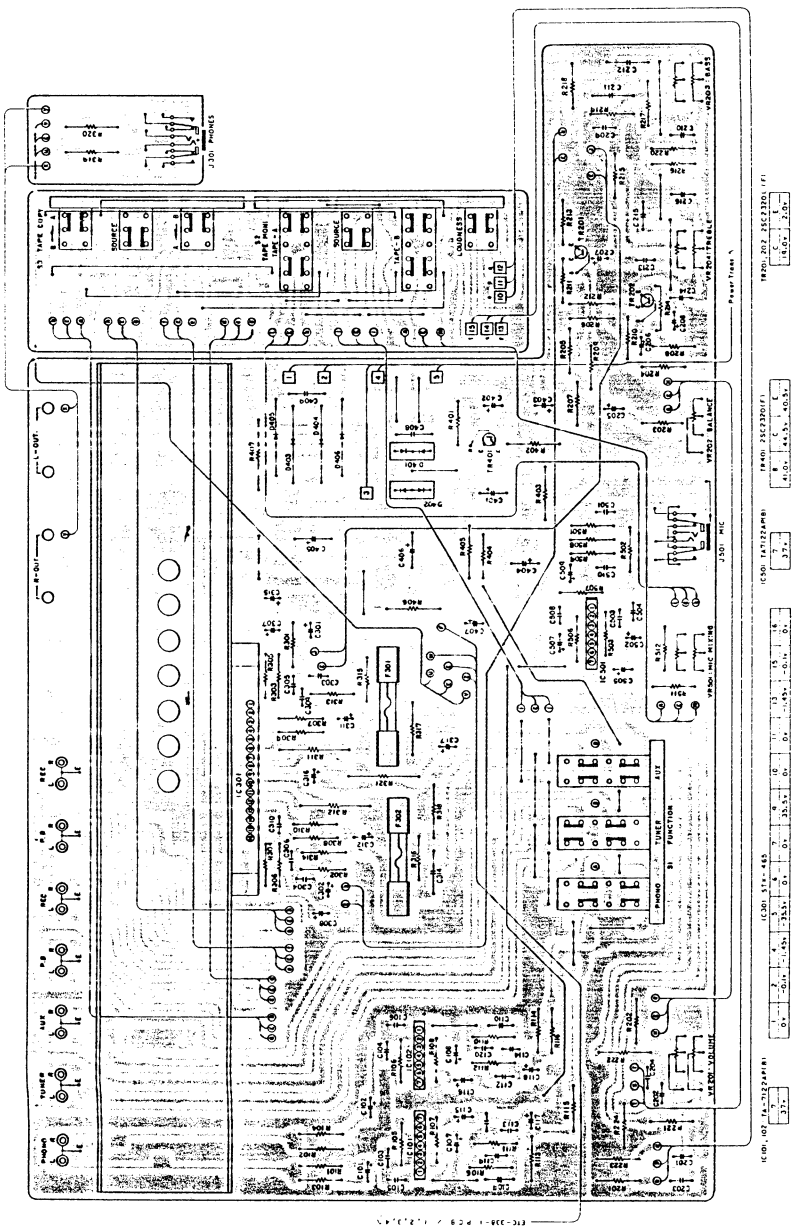


- ALIGNING STEPS

1. Adjust the volume knob so that the output voltage display will be about 2V.
2. Switch the L/R switch to the lower output-level channel.
3. Adjust the attenuator of the low-frequency oscillator to set the output at 1.9V precisely.
4. By a "minus" screwdriver, adjust VR601.L (or VR602.R) of "ETC-338-a" in the tuner, so that the front L-channel (or R-channel) 0.5W segment will begin flashing (where it grows dim).
5. Set the other channel in a similar way.
6. Adjust the volume control in the tuner so that the output voltage display will be about 11V.
7. Switch the L/R switch to the lower output-level channel.
8. Adjust the attenuator of the CR low-frequency oscillator to set the output level at 10.95V (15W/8 ohms) precisely.
9. Make sure the front 15W segment is flashing (both for L and R channels).
10. When the front segment is outside the range as illustrated, take the following steps:
    - 10-1 Repeat the above steps 1 through 3.
      When the 50W segment flashes at the output voltage of 10.95V (15W/8 ohms), turn VR601 (or VR602) clockwise so that the 15W segment flashes.
      When the 15W segment fails to flash at the output voltage of 10.95V (15W/8 ohms), turn VR601 (or VR602) counterclockwise so that the 15W segment flashes.
    - 10-2 Confirm the above steps 1 through 5.

PRINTED CIRCUIT BOARD PATTERNS AND PARTS LIST

POWER & AMP UNIT ETC-337B (2DUK, 2DF), ETC-337C (2DG), ETC-337D (MDS, MDH)



ETC-337B (For 2DF, 2DI, 2DUK) PARTS LIST

*Mark make difference by model.

Ref. No.	Part No.	Part Name & Descriptions			
		SEMICONDUCTORS			
IC101,102	2630024027 or	TA-7122AP-B			INTEGRATED CIRCUIT
IC101,102	2630091018	μPC1023H(R)			INTEGRATED CIRCUIT
		CAUTION: SAME RANK USED.			
IC501	2630024027 or	TA-7122AP-B			INTEGRATED CIRCUIT
IC501	2630091018	μDC1023H(R)			INTEGRATED CIRCUIT
IC301	2650026005	STK-465			INTEGRATED CIRCUIT
TR201,202	2730206004	2SC2320L(F)			TRANSISTOR
TR401	2730204019	2SC2320(F)			TRANSISTOR
D401	2760242009	S2VC10			DIODE
D402	2760243008	S2VC10R			DIODE
D403,404,405, 406	2760223002	V23C			DIODE
		RESISTORS			
R509	2410276008	27 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R115,116	2410282005	47 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R502	2410292008	120 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
* R305,306	2410302008	330 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R103,104,203 R204	2410306004	470 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R213,214	2410307003	510 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R301,302,309 R310	2410314009	1 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R307,308	2410326000	3.3 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R217,218,221 R222,315,316	2410330009	4.7 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R211,212	2410332007	5.6 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R511,512,501	2410338001	10 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R111,112	2410340002	12 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R207,208	2410342000	15 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R201,202,215 R216,507	2410348004	27 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R303,304,313 R314	2410350005	33 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R401	2410356009	56 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R101,102,105 R106,503	2410362006	100 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R508	2410364004	120 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R205,206	2410365003	130 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R109,110,209 R210	2410366002	150 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R113,114	2410370001	220 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R107,108,506 R219,220	2410378003	470 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R317,318	2440013008	4.7 ohm	±5%	1W	FIXED METAL OXIDE FILM RESISTOR
R402	2440025025	47 ohm	±5%	1W	FIXED METAL OXIDE FILM RESISTOR FORMING TYPE
R403	2440033020	220 ohm	±5%	1W	FIXED METAL OXIDE FILM RESISTOR FORMING TYPE
R406	2440021029	22 ohm	±5%	1W	FIXED METAL OXIDE FILM RESISTOR FORMING TYPE
* R319,320	2440034003	270 ohm	±5%	1W	FIXED METAL OXIDE FILM RESISTOR
R405	2440046004	2.7 k ohm	±5%	1W	FIXED METAL OXIDE FILM RESISTOR
R311,312	2440058021	0.47 ohm	±5%	2W	FIXED METAL OXIDE FILM RESISTOR FORMING TYPE
R321	2440086022	100 ohm	±5%	2W	FIXED METAL OXIDE FILM RESISTOR FORMING TYPE
R407	2440102003	2.2 k ohm	±5%	2W	FIXED METAL OXIDE FILM RESISTOR
		CAPACITORS			
C511	2533607004	15pF	±5%	50V	FIXED CERAMIC CAPACITOR
C309,310	2533603008	10pF	±0.5pF	50V	FIXED CERAMIC CAPACITOR
C105,106	2533653003	47pF	±10%	50V	FIXED CERAMIC CAPACITOR
C504	2533654002	56pF	±10%	50V	FIXED CERAMIC CAPACITOR
C201,202	2533660009	180pF	±10%	50V	FIXED CERAMIC CAPACITOR
C103,104	2533661008	220pF	±10%	50V	FIXED CERAMIC CAPACITOR
C303,304,508	2533663006	330pF	±10%	50V	FIXED CERAMIC CAPACITOR
C113,114	2533641002	390pF	±5%	50V	FIXED CERAMIC CAPACITOR
C305,306,501	2533665004	470pF	±10%	50V	FIXED CERAMIC CAPACITOR
C318	2531024003	0.01μF	+8%,–20%	50V	FIXED CERAMIC CAPACITOR
C510	2531004007	0.001μF	±10%	50V	FIXED CERAMIC CAPACITOR
C503	2531008003	0.0047μF	±10%	50V	FIXED CERAMIC CAPACITOR
C410	2531053003	0.01μF	+100,–0%	500V	FIXED CERAMIC CAPACITOR
C408,409	2531053003	0.01μF	+100,–0%	500V	FIXED CERAMIC CAPACITOR
C213,214	2551066009	0.0033μF	±10%	50V	FIXED PLASTIC FILM CAPACITOR
C111,112	2551120097	0.0056μF	±5%	50V	FIXED PLASTIC FILM CAPACITOR
C209,210	2551072006	0.01μF	±10%	50V	FIXED PLASTIC FILM CAPACITOR
C203,204	2551074004	0.015μF	±10%	50V	FIXED PLASTIC FILM CAPACITOR
C215,216	2551075003	0.018μF	±10%	50V	FIXED PLASTIC FILM CAPACITOR
C109,110	2551121067	0.022μF	±5%	50V	FIXED PLASTIC FILM CAPACITOR
C211,212	2551082009	0.068μF	±10%	50V	FIXED PLASTIC FILM CAPACITOR
C313,314	2551084007	0.1μF	±10%	50V	FIXED PLASTIC FILM CAPACITOR
C117,118,207 208	2549011008	1μF		50V	FIXED ELECTROLYTIC CAPACITOR
C205,206	2541035008	1μF		35V	FIXED ELECTROLYTIC CAPACITOR
C502	2541002002	6.8μF		63V	FIXED ELECTROLYTIC CAPACITOR

Ref. No.	Part No.	Part Name & Descriptions		
C301,302,315 316	2544044009	1μF	50V	FIXED ELECTROLYTIC CAPACITOR
C509	2544043000	0.47μF	50V	FIXED ELECTROLYTIC CAPACITOR
C507	2544066003	2.2μF	50V	FIXED ELECTROLYTIC CAPACITOR
C115,116	2544034006	4.7μF	35V	FIXED ELECTROLYTIC CAPACITOR
C101,102	2544054002	22μF	16V	FIXED ELECTROLYTIC CAPACITOR
C311,312	2544037003	47μF	35V	FIXED ELECTROLYTIC CAPACITOR
C107,108,307, 308,505	2544003008	100μF	6.3V	FIXED ELECTROLYTIC CAPACITOR
C407	2544049004	47μF	50V	FIXED ELECTROLYTIC CAPACITOR
C317,402,403	2544050006	100μF	50V	FIXED ELECTROLYTIC CAPACITOR
C401,404	2544051005	220μF	50V	FIXED ELECTROLYTIC CAPACITOR
C405,406	2546041013	4700μF	45V	FIXED ELECTROLYTIC CAPACITOR
	OTHER PARTS			
	2220505105	P.C. BOARD		
	EP-5667H3	TERMINAL	FOR WRAPPING PIN USED 53	
	EP-5870	FUSE HOLDER	FOR WRAPPING PIN USED 4	
F301,302	2061025080	FUSE (3.15A)		
T301	2050061107	4P. TERMINAL	FOR SPEAKER TERMINAL	
T201	2040061007	6P. CONNECTOR BASE		
T202,203	2048021007	4P. CONNECTOR BASE		
J301,501	2048048006	HEAD PHONE JACK	WITH 12mm NUT	
S1	2124150009	PUSH SWITCH	FOR FUNCTION SWITCH	
S2	2124151105	PUSH SWITCH	FOR TAPE MONITOR, LOUDNESS SWITCH	
S3	2124152104	PUSH SWITCH	FOR TAPE COPY SWITCH	
VR201	2110212003	V1620V30K=254–	FOR MAIN VOLUME WITH 7mm NUT	
VR203,204	2110213002	V1620V25KA104–	FOR BASS, TREBLE WITH 7mm NUT	
VR202	2110198004	V1625KS254T	FOR BALANCE VOLUME WITH 7mm NUT	
VR501	2110201001	V1620V25KB104B	FOR MIC VOLUME WITH 7mm NUT	
	4170104117	RADIATOR	FOR IC301 FIXED	
	4730359014	TAPPING SCREW (2) 3x16	FOR IC301 FIXED	
	4730354019	TAPPING SCREW (2) 3x8	FOR RADIATOR FIXED	
	2090008162	JUMPER	SHORTLEAD USED 2 P=20mm	
	2090008104	JUMPER	SHORTLEAD USED 6 P=15mm	
	2090008117	JUMPER	SHORTLEAD USED 20 P=12.5mm	
	2090008146	JUMPER	SHORTLEAD USED 7 P=5mm	
	2090008159	JUMPER	SHORLEAD USED 3P=17.5mm	

ETC-337C (For 2DG) PARTS LIST

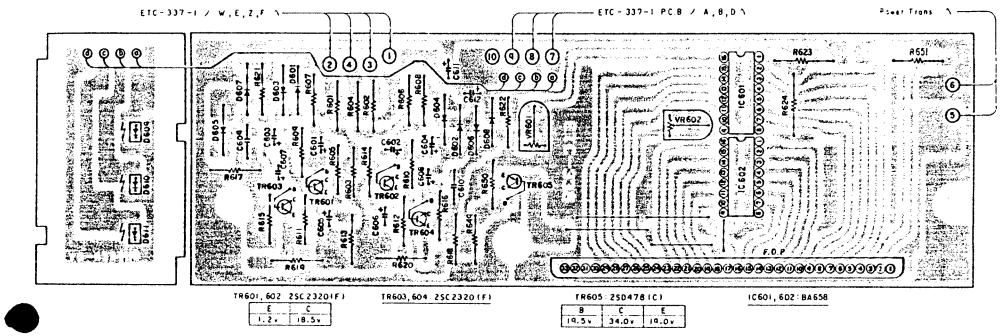
Remarks: All parts except below listed are the same as the above.

Ref. No.	Part No.	Part Name & Descriptions			
	RESISTORS				
R305,306	2410305005	430 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R319,320	2440032005	180 ohm	±5%	1W	FIXED METAL OXIDE FILM RESISTOR
	OTHER PARTS				
	4170104120	RADIATOR			
	4730805021	TAPPING SCREW 3 x 18			
	4170116008	POWER RADIATOR			

ETC-337D (For MDS, MDH) PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions
	OTHER PARTS	
	4170104104	RADIATOR

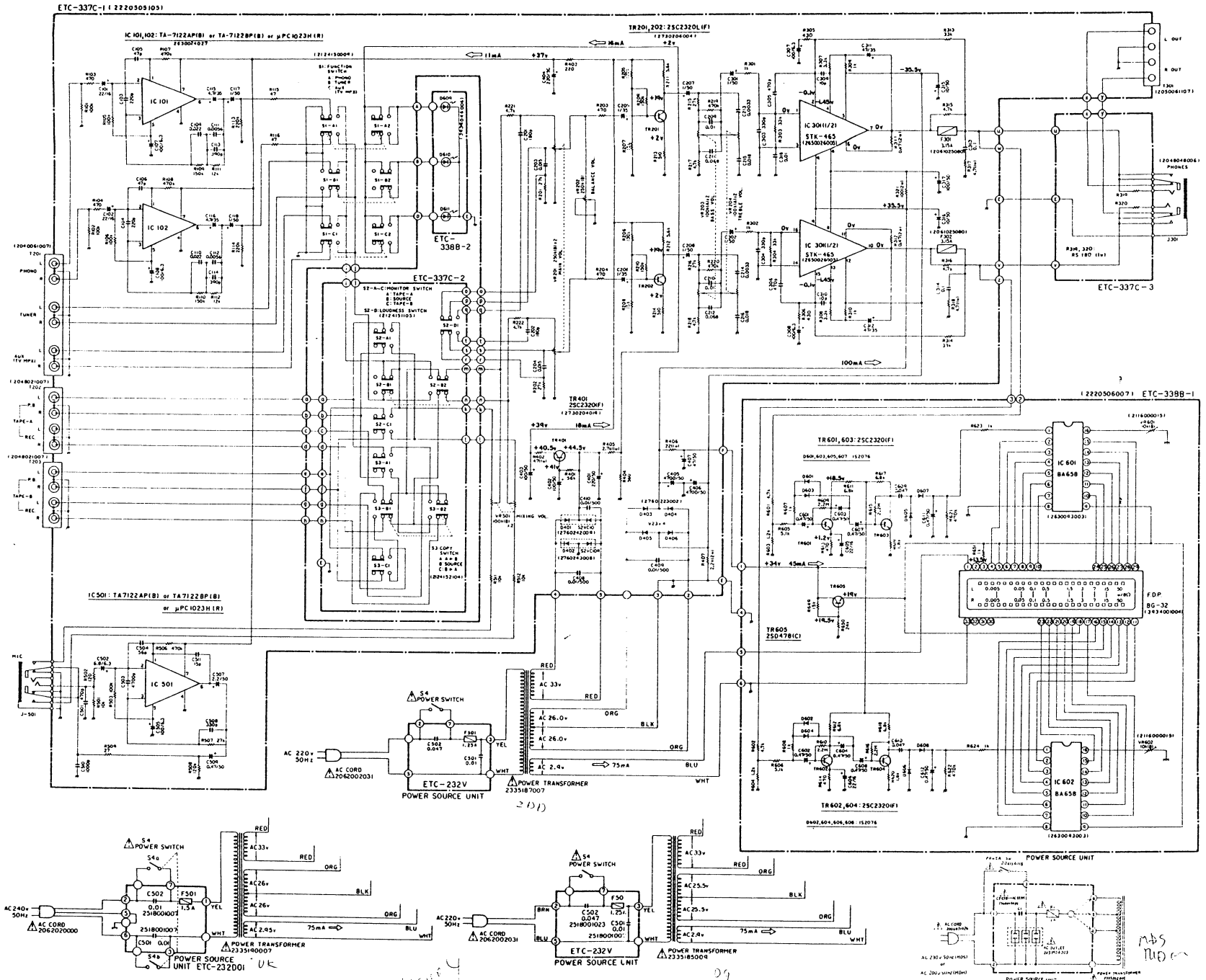
POWER INDICATOR UNIT ETC-338B



ETC-338B PARTS LIST

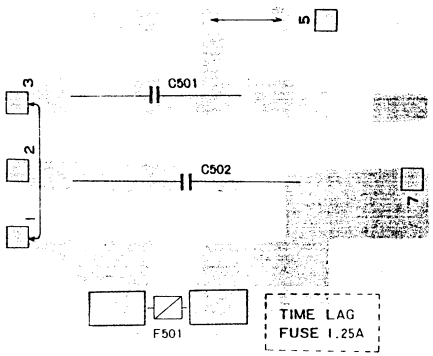
Ref. No.	Part No.	Part Name & Description			
	SEMICONDUCTORS				
IC601,602	2630093003	BA658			INTEGRATED CIRCUIT
TR601,602,603, 604	2730204019	2SC2320(F)			TRANSISTOR
TR605	2746044010	2SD478 (C)			TRANSISTOR
D601,602,603, 604,605,606, 607,608	2760049008	1S2076			DIODE
D609,610,611	3939046006	LED			LIGHT EMITTING DIODE ORANGE
	3934001004	F.D.P (BG-32)			
	RESISTORS				
R613,614	2410306004	470 ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R607,608,651 624,623	2410314009	1 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R603,604	2410316007	1.2 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R619,620	2410320006	1.8 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R601,602	2410330009	4.7 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R605,606	2410331008	5.1 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R611,612,617 618	2410334005	6.8 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R649	2410342000	15 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R650	2410347005	24 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R621,622	2410378003	470 k ohm	±5%	1/4W	FIXED CARBON FILM RESISTOR
R609,610,615, 616	2420195001	2.2 M ohm	±10%	1/4W	FIXED CARBON COMPOSIT RESISTOR
	CAPACITORS				
C609,610	2551080001	0.047μF	±10%	50V	FIXED PLASTIC FILM CAPACITOR
C601,602,603 604,607,608, 611,612	2544043000	0.47μF		50V	FIXED ELECTROLYTIC CAPACITOR
C605,606	2544054002	22μF		10V	FIXED ELECTROLYTIC CAPACITOR
	OTHER PARTS				
	2220506007	P.C. BOARD			
	EP-5667H3	TERMINAL	FOR WRAPPING PIN USED 9		
	4510035053	DISPLAY COVER ASS'Y			
	1290002082	SOFT TAPE	USED 2		
	4610094062	RUBBER SHEET	USED 2		
	4730305013	TAPPING SCREW(1) 3x10	FOR DISPLAY COVER ASS'Y FIXED		
VR601,602	2116000015	V08PB103	VARIABLE RESISTOR		
	2090008104	JUMPER	SHORTLEAD USED 4 P=15mm		
	2090008133	JUMPER	SHORTLEAD USED 1 P=7.5mm		
	2090008159	JUMPER	SHORTLEAD USED 1 P=17.5mm		
	2090008162	JUMPER	SHORTLEAD USED 1 P=20mm		

WIRING DIAGRAM

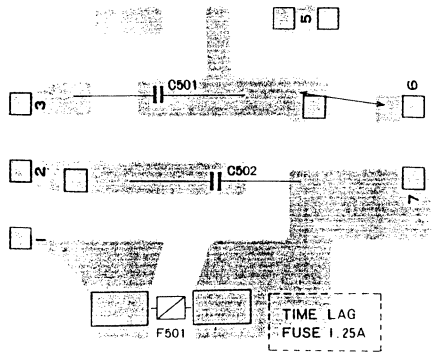


POWER SOURCE UNIT
ETC-232V (2DG, 2DF, 2DI), ETC-232D01 (2DUK), & POWER SOURCE UNIT (MDS, MDH)

ETC-232V



ETC-232D01



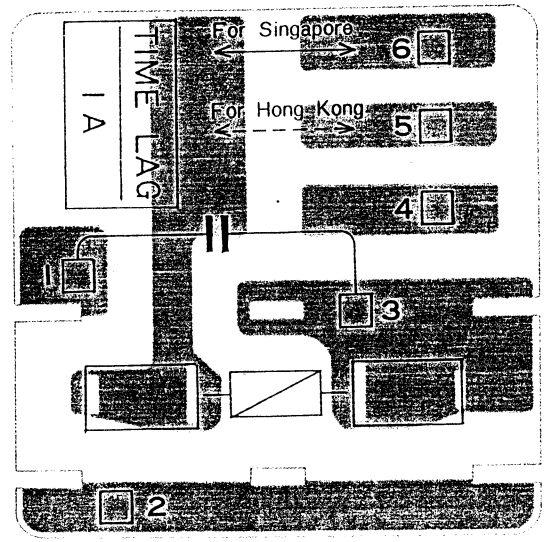
ETC-232V PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions
	CAPACITORS	
C501	2518001007	0.01μF ±20% 450V FIXED METALIZED CAPACITOR
C502	2518001023	0.047μF ±20% 450V FIXED METALIZED CAPACITOR
	OTHER PARTS	
F501	2220288105	P.C. BOARD
	EP-5667H3	TERMINAL FOR WRAPPING PIN USED 5
	2020014003	FUSE CLIP
	2061015016	FUSE 1.25A 250V
	2090008117	JUMPER SHORTLEAD USED 1 P=12.5 mm
	5130159156	FUSE LABEL
	4120622005	P.S. BRACKET
	4730354019	TAPPING SCREW 3 x 8

ETC-232D01 PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions
	CAPACITORS	
C501,502	2518001007	0.01μF ±20% 450V FIXED METALIZED CAPACITOR
	OTHER PARTS	
	2220288105	P.C. BOARD
	EP-5667H3	TERMINAL FOR WRAPPING PIN USED 9
	2020014003	FUSE CLIP
	5130159156	FUSE LABEL
	2061015016	FUSE 1.25A 250V
	2090008104	JUMPER SHORTLEAD USED 1 P=15mm
	4120622005	P.S. BRACKET
	4730354019	TAPPING SCREW 3 x 8

POWER SOURCE UNIT For Hong Kong & Singapore

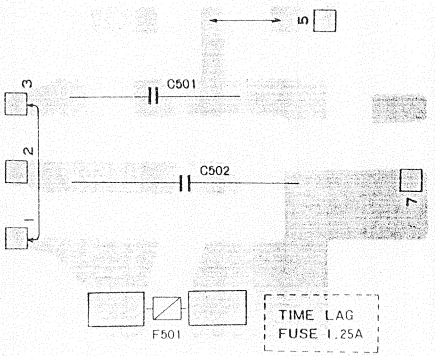


POWER SOURCE UNIT PARTS LIST

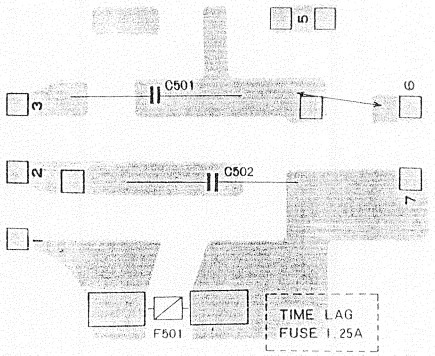
Ref. No.	Part No.	Part Name & Descriptions
	CAPACITORS	
C501	2568003039	0.033μF ±20% 300V FIXED METALIZED CAPACITOR
	OTHER PARTS	
	2220476108	P.C. BOARD
	EP-5667H1	TERMINAL FOR WRAPPING PIN USED $6
	EP-5870	FUSE HOLDER
	2061014004	FUSE 1A
	2033904003	AC OUTLET
	5130159101	FUSE LABEL
	2090008117	JUMPER SHORTLEAD USED 1 P=12.5mm

POWER SOURCE UNIT
ETC-232V (2DG, 2DF, 2DI), ETC-232D01 (2DUK), & POWER SOURCE UNIT (MDS, MDH)

ETC-232V



ETC-232D01



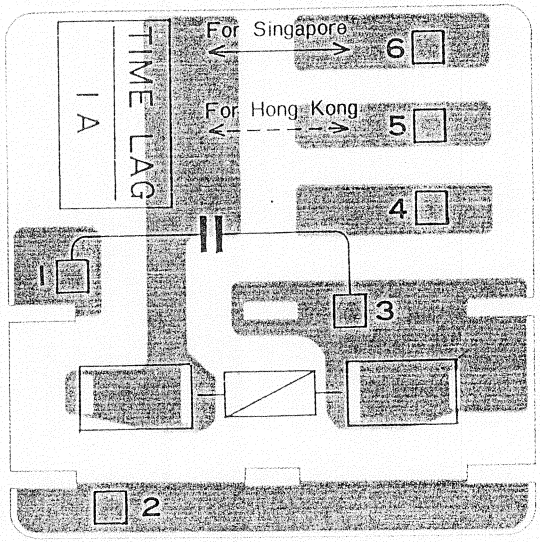
ETC-232V PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions
	CAPACITORS	
C501	2518001007	0.01μF ±20% 450V FIXED METALIZED CAPACITOR
C502	2518001023	0.047μF ±20% 450V FIXED METALIZED CAPACITOR
	OTHER PARTS	
F501	2220288105	P.C. BOARD
	EP-5667H3	TERMINAL FOR WRAPPING PIN USED 5
	2020014003	FUSE CLIP
	2061015016	FUSE 1.25A 250V
	2090008117	JUMPER SHORTLEAD USED 1 P=12.5 mm
	5130159156	FUSE LABEL
	4120622005	P.S. BRACKET
	4730354019	TAPPING SCREW 3 x 8

ETC-232D01 PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions
	CAPACITORS	
C501,502	2518001007	0.01μF ±20% 450V FIXED METALIZED CAPACITOR
	OTHER PARTS	
	2220288105	P.C. BOARD
	EP-5667H3	TERMINAL FOR WRAPPING PIN USED 9
	2020014003	FUSE CLIP
	5130159156	FUSE LABEL
	2061015016	FUSE 1.25A 250V
	2090008104	JUMPER SHORTLEAD USED 1 P=15mm
	4120622005	P.S. BRACKET
	4730354019	TAPPING SCREW 3 x 8

POWER SOURCE UNIT For Hong Kong & Singapore



POWER SOURCE UNIT PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions
	CAPACITORS	
C501	2568003039	0.033μF ±20% 300V FIXED METALIZED CAPACITOR
	OTHER PARTS	
	2220476108	P.C. BOARD
	EP-5667H1	TERMINAL FOR WRAPPING PIN USED $6
	EP-5870	FUSE HOLDER
	2061014004	FUSE 1A
	2033904003	AC OUTLET
	5130159101	FUSE LABEL
	2090008117	JUMPER SHORTLEAD USED 1 P=12.5mm